The Maritime Awareness Global Network

Supporting operations through intelligence.

by LT Russell Mayer
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In order to support Maritime Domain Awareness (MDA) operations, the U.S. Coast Guard Intelligence Directorate is increasing its ability to collect, evaluate, and disseminate a wide variety of information to field units and other government agencies. With more data available than ever before, the Coast Guard needs an enterprise-level solution for navigating the oceans of maritime information. To that end, the Intelligence Directorate has created the Maritime Awareness Global Network (MAGNet), an evolving, multifaceted intelligence capability, designed to deliver strategic and tactical intelligence to a broad array of users.

The Intelligence Directorate traces its roots to the prohibition era, working to prevent rum smuggling.[1] In 1983, several government agencies collectively created the Joint Maritime Information Element, or JMIE, with the objective of providing a maritime information system, which serves the members' operational missions: narcotics interdiction, smuggling, sea and defense zone surveillance, border control, petroleum traffic monitoring, and emergency sealift management.[2] Each of these missions meets a function of the overall MDA vision. JMIE's successor, MAGNet, accomplishes the above missions as well as fulfilling the increased demands of a post-9/11 environment.

MAGNet works to realize the Maritime Domain Awareness vision defined in the USCG Commandant's Direction 2002 message:

Figure 1: MAGNet geographic information system view. USCG graphic.

"Design and implement a Maritime Domain Awareness capability that provides integrated afloat, ashore, and airborne C4ISR that is focused on meeting both the informational needs of decision makers and the tactical needs of operational commanders. Ensure supporting C3 organizational structures exist at the port level to meet tactical mission objectives."

MAGNet decreases manpower requirements and increases command MDA by combining within one application that which is currently done by many. MAGNet collects, correlates, and disseminates maritime information at all security classification levels in support of all Coast Guard missions. MAGNet also contributes to a complete, consistent, near-real-time picture of the maritime domain for operational commanders. The USCG Assistant Commandant, Command, Control, Communications, Computers and Information Technology has designated MAGNet as the fusion platform for all MDA operations.

Figure 2: MAGNet vessel detail view. USCG graphic.

Using the System

Magnet data consumers include the Coast Guard's common operating picture, common intelligence picture, and data requests received from outside the U.S. Coast Guard. Coast Guard intelligence users and operational commanders can create customized queries to report information significant to that specific user. When predefined conditions exist, MAGNet alerts the user to the situation.

Using a browser-based graphical user interface, MAGNet users view summary, near-real-time information and query the system for historical information. The interface is simple point and click, with basic and advanced queries to quickly navigate through millions of pieces of data. With a geographic information system, MAGNet displays a chart, plotting contacts in a given area. The user immediately knows the vessel's name and notice of arrival status. Clicking on the vessel's icon will further detail critical vessel information (Figure 1).

For example, when viewing every vessel in a Captain of the Port (COTP) zone, the sector commander can isolate a vessel of interest and immediately obtain current information regarding vessel status, crew information, and cargo details (Figure 2). The commander can also view archived information, such as port history. With minimal effort, the commander can make an informed decision regarding the vessel.

System Description

MAGNet system architecture is composed of three independent systems, one for each classification level. These systems connect through high assurance guards to properly sanitize information before passing it to another level of classification (Figure 3). Each level collects, processes, and disseminates a complete MDA picture with the suitable level of information to the appropriate authorized user. MAGNet simultaneously receives input from multiple sources, while outputting correlated data to verified users throughout the Coast Guard and other agencies. The user can also query the system for current and/or historical information specific to their mission.

Using grid architecture, the system continuously balances user load between various locations to maximize speed and efficiency. The architecture's design also maximizes continuity of operations planning, in case of failure at one of the sites. The system will continue to operate the remaining sites with minimal impact on the user community.

The challenge of any data repository is to properly

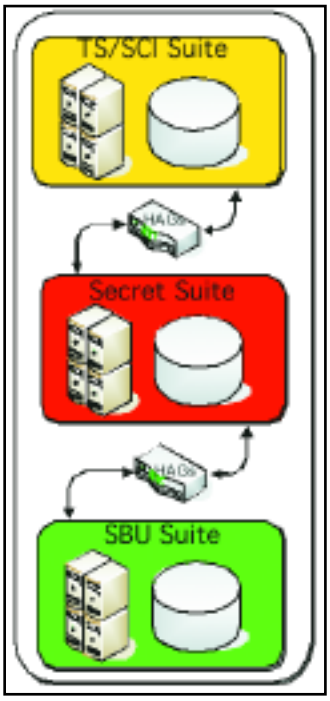

Figure 3: MAGNet employs three levels of classification, each independent from the others. USCG graphic.

collect, store, and correlate data efficiently and quickly. MAGNet serves as the central point for much of the Coast Guard intelligence program, allowing the user to query every available piece of information. Without that robust querying ability, the user would not be able to have as complete an operational picture as possible.

Partnerships

MAGNet utilizes a variety of data sources to provide users with enhanced Maritime Domain Awareness. MAGNet has data feeds from the Marine Information for Safety and Law Enforcement (MISLE) system, ship arrivals notification system, and the automated identification system. In addition to Coast Guard resources, MAGNet works with other agencies within the Department of Homeland Security to reduce information gaps. Collaboration with U.S. Customs and Border Protection and Immigration and Customs Enforcement is particularly important, to prevent dangerous persons from entering the country undetected.

To support the "National Strategy for Maritime Security" through global maritime intelligence integration, the Coast Guard coordinates with the U.S. Navy. Colocating with the Office of Naval Intelligence, the Coast Guard has direct, daily contact with the Navy to ensure complete Maritime Domain Awareness. Cooperation with Department of Defense units, Navy and otherwise, achieves the Coast Guard's military missions.

After the September 11, 2001 terrorist attacks, the "National Security Act of 1947" was amended to designate the Coast Guard as a member of the intelligence community (IC). Coast Guard Intelligence is unique in that it is the only IC member whose parent agency is both an armed force and a service organization with broad enforcement authorities.[3] Being an IC member allows the Coast Guard to share certain information with the rest of the intelligence community, as well as gaining access to previously unavailable data sources. MAGNet utilizes a variety of intelligence community systems to better complete the operational commander's picture of their area of responsibility (AOR).

MAGNet uses extensible markup language (XML), which acts as a translator between differing standards among a variety of existing systems. This is important because MAGNet communicates with other systems and databases without any modifications to either system. Even as the various programs change with time, the XML schema remains the same. Changes will no longer have to be coordinated by each of the system owners. As such, MAGNet leverages existing systems without any additional cost to the Coast Guard or to the American public.

The Coast Guard can not afford an intelligence gap in Maritime Domain Awareness. Intelligence analysts use MAGNet to evaluate the increasingly complex maritime theater of operations. Field commanders use MAGNet to understand the current operating picture in their AORs to make more informed decisions. With better intelligence and operations, the Coast Guard increases our nation's security and Maritime Domain Awareness. We, as stewards of the public trust and defense on the water, bear this burden more than any other agency. As such, MAGNet is an important part of the Coast Guard's solution for increased Maritime Domain Awareness oversight.

About the author:
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[1] http://www.intelligence.gov/1-members_coastguard.shtml
[2] "Investigator's Guide to Sources of Information" GAO/OSI-97-2
[3] http://www.intelligence.gov/1-members_coastguard.shtml